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        (FILE 'HOME' ENTERED AT 20:35:48 ON 18 MAR 2003)
        FILE 'CA' ENTERED AT 20:35:55 ON 18 MAR 2003
L1     637 S (FLAMMAB? OR INFLAMMAB?)(3A)(RISK? OR POTENTIAL? OR ABILITY OR
            POSSIBILITY OR CHARACTER?)
L2     136 S L1(6A)(DETECT? OR DETERMIN? OR ASSAY? OR ANALY? OR TEST? OR MEASUR?
            OR MONITOR? OR ESTIMAT? OR EVALUAT? OR EXAMIN? OR SCREEN? OR ASSES? OR
            SENSE# OR SENSING OR PROBE# OR PROBING OR QUANTIF? OR QUANTITAT?)
L3      82 S (FLAMMAB? OR INFLAMMAB?)(3A)(DIAGRAM? OR GRAPH? OR PLOT?)
L4      17 S L1 AND L3
L5      65 S L3 NOT L4
L6      41 S L3 NOT L4 NOT GRAPHITE
L7    5137 S (FLAMMAB? OR INFLAMMAB?)(3A)HAZARD OR EXPLOSION(3A)(RISK? OR
            POTENTIAL? OR ABILITY OR POSSIBILITY OR CHARACTER? OR HAZARD)
L8     777 S L7(6A)(DETECT? OR DETERMIN? OR ASSAY? OR ANALY? OR TEST? OR MEASUR?
            OR MONITOR? OR ESTIMAT? OR EVALUAT? OR EXAMIN? OR SCREEN? OR ASSES? OR
            SENSE# OR SENSING OR PROBE# OR PROBING OR QUANTIF? OR QUANTITAT?)
L9       7 S (FLAMMAB? OR INFLAMMAB? OR EXPLOSION)(3A)(DIAGRAM? OR GRAPH? OR
            PLOT?) AND L8
L10     33 S L8 AND (COMPUTER OR ALGORYTHM OR ALGORITHM)
L11      8 S L1 AND (COMPUTER OR ALGORYTHM OR ALGORITHM)
L12   1368 S (FLAMMAB? OR INFLAMMAB? OR EXPLOSION)(3A)(DANGER OR INDEX)
L13    167 S L12(6A)(DETECT? OR DETERMIN? OR ASSAY? OR ANALY? OR TEST? OR MEASUR?
            OR MONITOR? OR ESTIMAT? OR EVALUAT? OR EXAMIN? OR SCREEN? OR ASSES? OR
            SENSE# OR SENSING OR PROBE# OR PROBING OR QUANTIF? OR QUANTITAT?)
L14      7 S L13 AND(EXPERT OR COMPUTER OR ALGORYTHM OR ALGORITHM OR DIAGRAM? OR
            GRAPH? OR PLOT?)
L15    258 S L2-4,L6,L9-11,L14
L16    214 S L15 NOT(TIN OXIDE OR GRAPHITE OR COAL OR MELAMINE)OR(L15 AND(EXPERT
            OR CALIBRATION))
L17    184 S L16 NOT(RADIOACT? OR CALORIM? OR STATUS OR TEXTILE)
L18    171 S L17 NOT(CERAMIC OR RUBBER OR PILOT FLAME OR VENTILAT?)
L19    160 S L18 NOT PY>2000

=> d l19 bib,ab 1-160

(L19)  ANSWER 6 OF 160  CA  COPYRIGHT 2003 ACS
AN     133:336948  CA
TI     Determination of oxidizing ability of gases and gas mixtures
AU     Schroeder, Volkmar; Mackrodt, Brigitte; Dietlen, Siegmund
CS     Bundesanstalt fuer Materialforschung und -pruefung (BAM), Berlin, D-12200,
       Germany
SO     ASTM Special Technical Publication (2000), STP 1395(Flammability and
       Sensitivity of Materials in Oxygen-Enriched Atmospheres: Ninth Volume),
       456-468
AB     According to a no. of international and European regulations a gas, or
       mixt. of gases, is classified as an oxidizing substance if it is more
       oxidizing than air.  For classification it is necessary to have a method to
       det. reliable and comparable numerical data for the oxidizing ability of
       gases and a reliable calcn. method for mixts. of gases.  In ISO 10156
       "Gases and gas mixts. - Detn. of fire potential and oxidizing ability for
       the selection of cylinder valve outlets" a test method is given using
       pieces of plastic as combustible ref. material.  This method was tested in
       the past by Hoechst AG, Germany, and BAM and failed in the case of
       oxidizing gases other than air and oxygen.  Therefore BAM developed a new
       test method in cooperation with ISO subcommittee ISO/TC58/SC2.  The new
       procedure is based on the same app. and criteria applied for detn. of
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flammability in ISO 10156. The ref. combustible is the gas "Ethane". This paper describes the new test procedure and gives "coeffs. of oxygen equivalency (Ci)" for the oxidizing gases air, nitrous oxide, nitric oxide, chlorine, fluorine and nitrogen trifluoride. In the case of nitrous oxide, oxygen, air and nitrogen, a calcn. method for gas mixts. was checked.

L19 **ANSWER 9 OF 160   CA** COPYRIGHT 2003 ACS
AN   133:106529   CA
TI   Lower and upper flash points of flammable liquids with flame-suppressing agents
AU   Iwata, Yusaku; Koseki, Hiroshi; Hasegawa, Kazutoshi
CS   National Research Institute of Fire and Disaster, Tokyo, 181-8633, Japan
SO   Journal of Fire Sciences (1999), 17(6), 459-476

AB   The lower and the upper flash points of mixts. contg. non-flammable liqs. were measured by a modified Seta-flash closed-cup tester. The shape of the concn.-temp. region of flash depended on the components of the mixt. in soln. Concn. regions for a flash were calcd. from the temp. regions of flash and compared to the **flammability diagram**. We present a theor. method for calcg. both the lower and upper flash points by liq. mixt. thermodn., and the **flammability diagram**. The exptl. values for the methanol/water mixt. agreed with calcd. values, but disagreed for halogenated hydrocarbon mixts. The difference between the calcd. and exptl. values is from a flame-suppressing effect in the gas phase, which is distinct from the thermodn. effect on soln. We discuss the magnitude of this flame-suppressing effect exhibited by halogenated hydrocarbons in the gas phase.

L19 **ANSWER 10 OF 160   CA** COPYRIGHT 2003 ACS
AN   133:21545   CA
TI   Hydrogen systems safety assessment and risk-reduction
AU   Sanai, M.
CS   Poulter Laboratory, SRI International, Menlo Park, CA, 94025, USA
SO   Hydrogen Energy Progress XII, Proceedings of the World Hydrogen Energy Conference, 12th, Buenos Aires, June 21-26, 1998 (1998), Volume 3, 1955-1963. Editor(s): Bolcich, Juan Carlos; Veziroglu, T. Nejat. Publisher: Asociacion Argentina del Hidrogeno, Buenos Aires, Argent.

AB   A **computer** simulation of the explosion of a high pressure hydrogen tank introduced a novel accident anal. **computer** program (AACA). The AACA is a fast-running personal **computer**-based program which calcs. and graphically displays hazard ranges in easily discernable color contours. Since calcn. results are displayed within a few seconds, the AACA allows safety engineers to quickly assess any postulated accident scenario and select the appropriate risk redn. measures. The general approach to detg. the consequences of a postulated hydrogen accident is based on explosion and fire safety research and involved 5 steps: identify and characterize hazards produced in the accident including explosions, fragment impact, and fire; det. the load environment experienced by objects and people in the accident area; det. the resulting structural damage and personnel response; assemble results in a family of load-damage relationships; and incorporate these relationships in a user-friendly personal **computer**-based **algorithm** to rapidly analyze various accident scenarios and evaluate possible mitigation schemes. Advances made in the AACA, including 2 new modules which address hazards due to fragments and fire, are discussed.

L19 ANSWER 13 OF 160   CA   COPYRIGHT 2003 ACS
AN   132:155830   CA
TI   Off-site ignition probability of flammable gases
AU   Rew, P. J.; Spencer, H.; Daycock, J.
CS   WS Atkins Safety and Reliability, Epsom, Surrey, KT18 5BW, UK

AB   A key step in **assessing risks** for installations where **flammable** liqs. or
        gases are stored is **estg.** ignition probability. A review of current
        modeling and data confirmed that ignition probability values used in risk
        analyses tend to be based on extrapolation of limited incident data or, in
        many cases, on the judgement of those conducting the safety assessment.
        Existing models tend to assume that ignition probability is a function of
        release rate (or flammable gas cloud size) alone; they do not consider
        location, d., or ignition source type. An alternative math. framework to
        calc. ignition probability is outlined in which the approach used is to
        model the distribution of likely ignition sources and calc. ignition
        probability by considering whether the flammable gas cloud will reach these
        sources. Data were collated on the ignition properties of sources within 3
        generic land-use types: industrial, urban, and rural. These data were
        incorporated into a working model for ignition probability in a form
        capable of being implemented within risk anal. models. Model sensitivity
        to assumptions made in deriving ignition source properties is discussed and
        the model is compared with other available ignition probability methods.

(L19)   ANSWER 14 OF 160   CA   COPYRIGHT 2003 ACS
AN   132:141202   CA
TI   Developments in vapour cloud explosion blast modeling
AU   Mercx, W. P. M.; van den Berg, A. C.; Hayhurst, C. J.; Robertson, N. J.;
        Moran, K. C.
CS   TNO Prins Maurits Laboratory, Rijswijk, Neth.
SO   Journal of Hazardous Materials (2000), 71(1-3), 301-319
AB   TNT equivalency methods are widely used to model vapor cloud explosion
        blast; however, other types of models are available which do not have the
        fundamental objections TNT equivalency models have. The TNO multi-energy
        method is increasingly accepted as a more reasonable alternative for use as
        a simple, practical method. **Computer** codes based on computational fluid
        dynamics (CFD), such as AutoReaGas, developed by TNO and Century Dynamics,
        could be also used when a more rigorous anal. is required. Applying the
        multi-energy method requires knowledge of 2 parameters describing an
        explosion: charge size and charge strength. Recently, research led to an
        improved detn. of charge strength (i.e., the class no. or source over-
        pressure) to be chosen to apply blast charts. A correlation was derived
        relating charge strength to a set of parameters describing the boundary
        conditions of the flammable cloud and fuel in the cloud. A simple approach
        may not be satisfactory in all situations. Over-pressure distribution
        inside a vapor cloud explosion is generally not homogeneous and the
        presence of obstructions cause directional blast propagation in the near-
        field. A CFD approach, in which the actual situation is modeled, supplies
        case-specific results. An overview of the key aspects relevant to applying
        the multi-energy method and CFD modeling is provided. Then application of
        these 2 methods is demonstrated for an example problem involving calcn. of
        the explosion blast load on a structure at some distance from the explosion
        in an offshore platform complex.

(L19)   ANSWER 17 OF 160   CA   COPYRIGHT 2003 ACS
AN   131:48326   CA
TI   Preventing hazards
AU   Rogers, R. L.; Maddison, N.
CS   Moorhead Court, Southampton, SO14 3GQ, UK
SO   Speciality Chemicals (1999), 19(3), 114-116
AB   A review with 17 refs. on the elimination of risks of fire and explosions,
        and chem. reaction hazards. Ignition sources and their avoidance,
        flammability characteristics of materials, implementing of safety **measures**

for fire and explosion hazards, provision against the consequences of ignition, and careful evaluation of hazards are discussed.

AN 130:212968 CA
TI Process plant risk analysis
AU Nair, M. P. Sukumaran
CS FEDO-FACT, Cochin, India
SO CEW, Chemical Engineering World (1998), 33(8), 87-92
AB Process hazard anal. is gaining importance in the chem. industry, particularly since expensive fires, explosions, and toxic gas releases which occurred in the industry have invited worldwide attention on pre-planning disasters and on taking remedial actions well in advance. Most governments, industries, companies, and public agencies share a fundamental desire to minimize the potential for injury to people and damage to the environment, property, or investments from industrial activity. Topics discussed include: hazard identification (what-if anal., check lists, fault trees, event trees, cause-consequence **diagrams**, hazard operability studies [HAZOP]); hazard **assessment** (Dow fire and **explosion index**; Mond fire, **explosion**, and toxicity **index**; failure mode effect **anal.**; fault tree **anal.**; event tree anal.; disaster management); hazard identification for disaster planning (vulnerability anal., estn. of vulnerable zone, risk anal.); risk assessment (probability of occurrence, severity of consequences); risk anal. matrix (quant. risk assessment, disaster potential, thermal radiation effects, pressure wave effects, toxic gas release, event probabilities); risk specification; and accuracy of results.

AN 130:6880 CA
TI Application of the **flammability diagram** for **evaluation** of fire and **explosion hazards** of **flammable** vapors
AU Mashuga, Chad V.; Crowl, Daniel A.
CS Department of Chemical Engineering, Michigan Technological University, Houghton, MI, 49931, USA
SO Process Safety Progress (1998), 17(3), 176-183
AB The safest method to prevent fires and explosions of flammable vapors is to prevent the existence of flammable mixts. in the first place. This method requires detailed knowledge of the flammability region as a function of the fuel, oxygen, and nitrogen concns. A triangular **flammability diagram** is the most useful tool to display the flammability region, and to det. if a flammable mixt. is present during plant operations. This paper describes how to draw and use a **flammability diagram**. A procedure to est. the flammability region using the available and sometimes limited data is discussed. The paper also shows how to use the **flammability diagram** with plant operations involving inerting and purging, and from bringing vessels into and out of service. A compilation of **flammability diagrams** for 30 materials, based on previously published data, is provided. An automated app. for acquiring data for a **flammability diagram** is described. The app. consists of a 20-L sphere with an automated gas mixing system, a fuse-wire ignition system, and a high-speed pressure measurement and data acquisition system. Data derived from the app. include flammability limits, max. pressure during combustion, and the max. pressure rate. The effect of fuse-wire ignitor dynamics on the results is studied. A **flammability diagram** for methane, drawn from data obtained from the app., is presented.

AN 128:261087 CA
TI Safe handling of flammable liquids in process vessels: a QRA approach

AU Darnell, Gary F.; Lodal, Peter N.; Singh, Jasbir
CS Tennessee Eastman Division, Eastman Chemical Company, Kingsport, TN, USA
SO International Conference and Workshop on Risk Analysis in Process Safety,
    Atlanta, Oct. 21-24, 1997 (1997), 651-665 Publisher: American Institute of
    Chemical Engineers, New York, N. Y.
AB Process vessels contg. flammable liqs. above their flash point are commonly
    inerted with N to reduce the risk of explosion. This is an expensive
    choice, particularly for older plants that must be retrofitted; the
    benefits must be weighed against the risk to operators and maintenance
    staff from N asphyxiation. Historical operating data suggested the
    explosion risk in well-managed facilities is very small; therefore, the
    need to inert is not always obvious. A cursory review of the problem
    without using a methodical framework and in the absence of realistic data
    invariably leads to the conclusion that inerting is required to achieve an
    acceptable risk level. Use of Quant. Risk Assessment (QRA) as the
    framework to identify important operating variables, flammability, and
    process data typically required to conduct such an anal., and to quantify
    the explosion risk assocd. with process vessels handling liqs. above their
    flash point, is discussed. A generic process is used and the application
    of this information to produce a useful and relevant result, is discussed
    in the context of current operational practices.

L19 ANSWER 23 OF 160   CA   COPYRIGHT 2003 ACS
AN 128:158207   CA
TI A knowledge-based system for safety consideration in dust-treating
    equipment
AU Hesener, Ute
CS Dortmund, Germany
SO Fortschritt-Berichte VDI, Reihe 3: Verfahrenstechnik (1997), 508, 1-214
LA German
AB The studies presented aim at the development of a **computer**-supported system
    for the **assessment** of the **explosion hazard** of dusts and hybrid mixts. as
    well as fires and exothermal decompn. in solids-processing equipment.

L19 ANSWER 31 OF 160   CA   COPYRIGHT 2003 ACS
AN 127:85162   CA
TI Investigation of the flammability limits of acetic acid at elevated
    temperature and pressure
AU Hoyle, M.; Astbury, G. R.
CS Zeneca Specialties, Manchester, M9 8ZS, UK
SO Institution of Chemical Engineers Symposium Series (1997), 141(Hazards
    XIII: Process Safety--The Future), 293-304
AB Predictive models estn. of the flammable limits of materials at elevated
    temps. and pressures are reliable for simple hydrocarbon solvents. Certain
    materials, such as acetic acid, dimerize in the vapor phase; this can have
    unpredictable affects on flammability limits. The flammable limits of
    acetic acid vapor in air at elevated temp. and various applied pressures
    was exptl. detd. Results were compared with those predicted by the models.
    Construction of **flammability diagrams** allowed prediction of the vapor
    compn. flammability during a chem. process, at elevated temp. and pressure,
    using acetic acid as a solvent medium.

L19 ANSWER 35 OF 160   CA   COPYRIGHT 2003 ACS
AN 126:108072   CA
TI **Computer** simulation of explosion of a pressurized hydrogen storage tank
AU Sanai, Mohsen
CS Poulter Laboratory, SRI International, Menlo Park, CA, 94025, USA
SO Hydrogen Energy Progress XI, Proceedings of the World Hydrogen Energy

Conference, 11th, Stuttgart, June 23-28, 1996 (1996), Volume 3, 2149-2158.
Editor(s): Veziroglu, T. Nejat. Publisher: International Association for
Hydrogen Energy, Coral Gables, Fla.

AB   SRI International, a not-for-profit research organization chartered in the
      United States, has been tasked to evaluate the safety of hydrogen in
      various operations and processes of the World Energy Network (WE-NET)
      system. Based on the available exptl. data and advanced **computer**
      simulation of explosion accidents, SRI has developed a novel **computer**
      program, called accident anal. **computer algorithm** (AACA), that uses the
      pressure-impulse (PI) methodol. to quickly calc. the response of humans and
      structures to postulated explosion accidents. The results are displayed
      graphically in the form of color contours of equal damage levels. Because
      the probability of occurrence is included as part of the PI isodamage
      curves, the AACA can also function as a probabilistic risk assessment tool.
      In addn., an economic anal. module can be incorporated into the program to
      allow safety engineers to find the most cost-effective soln. to hazards
      mitigation. Load-damage correlations used in this **algorithm** can be
      expanded to include other WE-NET accident scenarios.

L19   ANSWER 38 OF 160   CA   COPYRIGHT 2003 ACS
AN   124:210429   CA
TI   Ensure process vent collection system safety
AU   Clark, David G.; Sylvester, Robert W.
CS   Du Pont Eng., Wilmington, DE, USA
SO   Chemical Engineering Progress (1996), 92(1), 65-77
AB   To ensure process vent collection system (VCS) safety, proper design and
      operation begins with considering the system as a unit operation and giving
      it the same wt. as a piece of process equipment. Due to the
      interconnective nature of VCS, hazards initiated in them can potentially
      affect >1 unit operation. Administrative, design, and operational
      recommendations are made to adequately deal with the safety issues such
      systems present. Topics discussed include: VCS design recommendations;
      process hazards anal. (ownership and responsibility, process hazards review
      [PHR], hazards identification, hazards and operability anal., consequence
      anal., change management); understanding flammability (fire triangle, estg.
      flammability limits, temp. and pressure effects, mists and dusts,
      flammability diagrams, ignition sources); VCS hazards, reactions, and
      safety (explosion and flashback, internal and external, exothermic
      reactions and reactive chems.); required operating modes (lean operation;
      inerted operation; interlocks, alarms, and control systems; mixing of
      streams; using monitors to det. compn., flow-ratio control; flammable
      sources; arrestor use); recommendations summary; and system-component
      design considerations (piping, relief-valve discharge, pressure drop,
      isolation or block valves, low-point drains and knockout pots, arrestors
      and liq. seals, thermal variation considerations, O and hydrocarbon
      monitors).

L19   ANSWER 42 OF 160   CA   COPYRIGHT 2003 ACS
AN   123:151589   CA
TI   **Evaluation** of fire and **explosion hazard** and optimization of air exchange in
      drying ovens
AU   Andreev, V. V.; Koshmarov, B. A.; Kozlov, Yu. I.
CS   Vyssh. Inzh. Pozharno - Tech. Shkola, Russia
SO   Lakokrasochnye Materialy i Ikh Primenenie (1994), (5), 29-31
LA   Russian
AB   An **algorithm** for calcn. of optimal air exchange in drying ovens is
      presented.

AN   122:317838 CA
TI   Simulating flammability under process conditions
AU   O'Shaughnessey, Dan; Powers, Bruce
CS   Dow Chemical Co., Midland, MI, 48667, USA
SO   Process Safety Progress (1995), 14(1), 22-5
AB   Establishing safe operating parameters requires the **detn.** of **flammability**
      characteristics under a myriad of process conditions. In order to meet
      these needs, a combined approach of literature search, calculational
      modeling, and exptl. simulation is often utilized. A few specific projects
      are discussed as example methods for evaluating flammability properties
      under challenging environments. **Flammability diagrams** and system
      configuration figures are presented while the interesting discoveries of
      each project are covered for interpretation and application to process
      conditions.

AN   122:168809 CA
TI   DUST **EXPERT** - an **expert** system for **evaluation** of **explosion hazards** and for
      selection of explosion protection **measures** in dust processing installations
AU   Haefen, E. von; Schecker, H. -G.
CS   FB Chemietechnik, Universitat Dortmund, Dortmund, 4600/50, Germany
SO   VDI-Berichte (1992), 975(Sichere Handhabung Brennbarer Staeube), 359-78
LA   German
AB   The program is run on IBM-compatible **computers** in Microsoft Windows system.

AN   122:13165 CA
TI   RM-6EX: **Computer** method for hazard energy output appraisal and estimation
      of explosiveness based on both thermodynamic and kinetic viewpoint
AU   Kaderabek, Vaclav
CS   Department Theory and Technology Explosives, University Chemical
      Technology, Pardubice, CZ - 532 10, Czech Rep.
SO   Proceedings of the International Pyrotechnics Seminar (1994), 20TH, 515-32
AB   A **computer** program, for prediction of the hazard potential of unstable and
      energetic compds., is based on the max. heat of decompn., $\Delta Hdec$, the heat
      of combustion, $\Delta Hcomb$, oxygen balance, OB (from a thermodn. viewpoint),
      and crit. temp., Tm (from a kinetic viewpoint). A new approach to $\Delta Hdec$
      prediction was involved. A fully independent DataBank system, including a
      user's defined base, was incorporated into the program, making possible all
      common types of information sorting. The program also provides calcn. of
      the heat of reaction, ΔHr, entropy of reaction, Sr, and Gibbs energy of
      reaction, ΔGr of the mixts. Finally, the program is furnished with useful
      tools to est. the heat of formation, ΔHf (Benson and Allen methods), the
      heat of combustion, $\Delta Hcomb$ (Laidler method), the heat capacity, Cp, and
      their dependence on temp. The kinetic part is focused on calcn. of Tm by
      the Frank-Kamenetski equation. A block scheme of the RM-6EX program was
      presented.

AN   121:112501 CA
TI   Interactive **computer** program to predict process hazards
AU   Satyanarayana, K.; Kakati, M. C.
CS   Chem. Eng. Dep., Reg. Res. Lab., Jorhat, 785 006, India
SO   Indian Chemical Engineer (1959-1993) (1993), 35(4), 221-4
AB   A **computer** program in dbase (Plus) and Fortran 77 was developed to **est.** the
      fire and **explosion index** of any chem. using the Dow's index procedure. The
      spline technique is adopted to est. the penalty factor under process

hazards. Various phys. properties of 900 hazardous chems. were used in risk and hazardous anal. to identify inherent process hazard.

L19 ANSWER 54 OF 160 CA COPYRIGHT 2003 ACS
AN   120:222148 CA
TI   MINEX - a prototype **expert** system for mine safety
AU   Soundararajan, Ranganathan; Riordan, Denis; Dawd, Nasif
CS   Dep. Chem. Eng., Tech. Univ. Nova Scotia, Halifax, NS, B3J 2X4, Can.
SO   Proceedings of the Summer Computer Simulation Conference (1992), 24th, 418-22
AB   A prototype object-oriented system was developed for **assessment** of underground **explosion potential** in the mining industry, which integrates a detailed model of the explosion triangle with a knowledge of federal and provincial safety regulations and mine-specific knowledge acquired from mine safety engineers. Results of expts. on dust explosion testing of several Nova Scotia coals were included in the model. The system was developed using PROGRAPH, which is an object-oriented visual programming tool. Currently, the prototype concs. on coal since information is readily available, but the structure general enough to be adapted to other mine types. Prograph is a very high-level pictorial object-oriented programming environment used to represent the MINEX knowledge base (e.g., a diagnostic **expert** system) as a collection of frames or objects.

L19 ***ANSWER 59 OF 160*** CA COPYRIGHT 2003 ACS
AN   119:187558 CA
TI   **Expert** system for prediction of safety in manufacture of a mixture of gases
AU   Yoshikawa, Hiroshi; Ueno, Hiroshi
CS   Nippon Sanso K. K., Kawasaki, 210, Japan
SO   Koatsu Gasu (1993), 30(4), 273-85
AB   Phys. and chem. properties of many gases were stored in a **computer** as a database for the **expert** system. The system first checks the concn. of each gas to be mixed. If it is beyond the safety limit, the manuf. of the mixt. is rejected. The reactivity of each gas is checked and if any of the gases react with each other, the gas mixt. can be manufd. and a message is displayed. The explosion limit of the mixt. is examd. The system also provides the order of addn. of gases to a container, method of anal., and pressure of the mixed gases.

L19 ***ANSWER 86 OF 160*** CA COPYRIGHT 2003 ACS
AN   108:81199 CA
TI   Hazard risk analysis associated with production and storage of industrial gases
AU   Hempseed, J. W.
CS   Air Products Ltd., Surrey, KT12 4RZ, UK
SO   Bericht ueber das Internationale Kolloquium ueber die Verhuetung von Arbeitsunfaellen und Berufskrankheiten in der Chemischen Industrie (1987), 11th, 141-73
AB   Hazard risk and consequence anal. used in the design of chem. plants includes: a preliminary hazard review, design hazard review, design verification review, and a safe-to-operate inspection. Hazards are identified using techniques such as "what if" and major consequences are **quantified** in terms of gas dispersion and **explosion** effects. A detailed **hazard** and operability study is performed and all significant hazards are quantified using fault trees or event trees. In-house **computer** programs allow these calcns. to be completed quickly and efficiently.

L19 ANSWER 87 OF 160 CA COPYRIGHT 2003 ACS
AN   108:26504 CA

TI   Automatic **calibration** and control system for combined oxygen and
      combustibles analyses
IN   Woolbert, Gordon Davies; Jewett, Scotty Young; Robertson, John Walter, Jr.
PA   Babcock and Wilcox Co., USA
SO   Eur. Pat. Appl., 10 pp.
PI   EP 242946   A2   19871028   EP 1987-301222   19870212
      US 4852384   A   19890801   US 1986-854256   19860421
PRAI US 1986-854256   19860421
AB   The title system, esp. for **monitoring** and signalling **potentially flammable**
      or explosive conditions, e.g., in coal pulverizers, comprises an analyzer
      for sensing a level of O and a level of combustibles in a volatile atm. and
      producing a 1st signal indicating the O level and a 2nd signal indicating
      the combustible level, a **calibration** test gas feed, and means for
      concurrently calibrating the signals indicating the O and combustible
      levels from the analyzer. The **calibration** means may comprise a memory unit
      for storing signals indicating the O and combustible levels and a timer for
      setting discrete time intervals and providing control signals at the set
      time intervals to activate the **calibration** test gas feed. An automatic
      control system for monitoring a hostile environment comprises means for
      connecting the system to the environment, means for presetting limit
      values, means for analyzing the levels of combustibles and O in the
      environment and providing indicative signals, means for periodically
      calibrating the signals, and means for alerting an operator when the
      calibrated signals are above the limit values.

L19   **ANSWER 91 OF 160   CA   COPYRIGHT 2003 ACS**
AN   106:201065   CA
TI   Economical and efficient use of nitrogen in chemical and petrochemical
      processes
AU   Guedes Filho, Eduardo; Silva, Maria Regina
CS   Brazil
SO   Mineracao Metalurgia (1986), 50(480), 56-8
LA   Portuguese
AB   **Computer** programs were developed to **det.** the **explosion risk** of **flammable**
      vapors and gases and **det.** the amt. of N(g) to be added to protective atms.
      in industrial processes to prevent explosions. The methodol. can reduce
      the vol. of N used and in some cases reduce the operating time required.

L19   ANSWER 95 OF 160   CA   COPYRIGHT 2003 ACS
AN   101:194622   CA
TI   Flammability of gaseous mixtures of ethylene oxide, nitrogen, and air
AU   Plett, Edelbert G.
CS   Carleton Univ., Ottawa, ON, Can.
SO   Plant/Operations Progress (1984), 3(3), 190-3
AB   **Flammability diagrams** are given for ethylene oxide [75-21-8] mixts. with
      N2 and air at total pressures of 6.9, 101.3, and 308 kPa. The degree of
      mixing was of crit. importance to obtaining consistent results. The
      overall pressure had some effect on the flammability limits.

L19   ANSWER 98 OF 160   CA   COPYRIGHT 2003 ACS
AN   100:54038   CA
TI   Flammability of the ethylene oxide-Freon 12-air system
AU   Fiumara, Annunziata; Mazzei, Nicola
CS   Staz. Sper. Combust., San Donato Milanese, Italy
SO   Chimica e l'Industria (Milan, Italy) (1983), 65(11), 683-7
LA   Italian
AB   Mixts. of ethylene oxide [75-21-8] with Freon 12 [75-71-8] are widely
      used com., esp. in hospitals for sterilization of surgical instruments.

These mixts. can be explosive. The **flammability diagram** for the ethylene oxide-Freon 12-air system at atm. pressure and 60° was detd.

L19 ANSWER 105 OF 160   CA   COPYRIGHT 2003 ACS
AN   96:180872   CA
TI   An experimental study on the conditions of safe oxidation of toluene with oxygen-carbon dioxide mixtures
AU   Crescitelli, Silvestro; De Stefano, Giuseppe; Pistone, Luigi; Russo, Gennaro; Tufano, Vincenzo
CS   Ist. Chim. Ind. Impianti Chim., Univ. Naples, Naples, 80125, Italy
SO   Journal of Hazardous Materials (1982), 5(3), 189-96
AB   The flammability limits of satd. vapors of PhMe in O2-CO2 mixts. were measured at ≤180°/10 atm using a direct rapid exptl. technique. The **flammability** data are **plotted** as pressure vs. temp. for the convenience in the detn. of safe operating conditions for liq.-phase oxidns. (steady and/or transient state) of hydrocarbons.

L19 ANSWER 115 OF 160   CA   COPYRIGHT 2003 ACS
AN   93:116713   CA
TI   Flammability of ethylene oxide in sterilizer operations
AU   Bajpai, S. N.
CS   Fact. Mutual Res. Corp., Norwood, MA, USA
SO   Loss Prevention (1980), Volume Date 1979, 13, 119-22
AB   The flammability of ethylene oxide (I) [75-21-8] in 3 sterilizing operations was studied at 50-66° in CO2, N2, and/or steam. The mixts. had different flammabilities during different inerting stages and for different final compns. A **flammability diagram** is given for a ternary system of I, air, and diluent (CO2 or N2 with water). Pure I does not propagate a decompn. flame at <356 mm Hg abs. Addn. of inerting agent prior to addn. of I is recommended to assure against explosion hazards in sterilizing operations.

L19 ANSWER 119 OF 160   CA   COPYRIGHT 2003 ACS
AN   90:106596   CA
TI   Inertness: use of carbon dioxide
AU   Anon.
CS   Fr.
SO   Informations Chimie (1978), 183, 177-80
LA   French
AB   Flammability limits, ignition temp., etc., are discussed and **diagrams** given for **flammability** limits of CH4 [74-82-8]-O2-N2 mixts., of C2H6 [74-84-0], C2H4 [74-85-1], C6H6 [71-43-2] mixts. with air and CO2, of trichloroethylene [79-01-6]-O2-N2 mixts., and CH4-air mixts. with CO2, H2O, N2, He, or Ar. An app. for the automatic prepn. and delivery of mixts. made inert by CO2 is described.

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